

writings Coromandel, when the conquest of Golconda and Beejapoor opened the way in this year to the extension of the Mogul dominions, and their system of financial administration was first introduced and proposed to be extended along with their arms into the provinces of the South.

In considering the gradual changes in the state of the Carnatic, the next great period that attracts attention and interest, comprehends nearly 55 years, from the conquest of Golconda and the Carnatic until the formation of the Dufter Assoofiah, soon after the return of Assoph Jah into Deckan, and assuming independency.

In this period comes to be considered the progressive extension of the Mogul system of government into the South, the causes that retarded a more rapid and general progress, arising in the civil wars that arose among the successors of Aurungzebe, which afforded room to the new Mahratta state to strengthen and expand itself; and ultimately weakening the provincial Mahomedan government, gave rise to three modern states in the Deckan independent of all control, and the two Nabobships of the Carnatic, gradually terminating in the government of Mysore and that of the Carnatic Payen Ghaut.

(*To be continued.*)

Notices of various Mammalia, with Descriptions of many New Species:
By ED. BLYTH, Curator of the Asiatic Society's Museum, &c.

PART I.—THE PRIMATES, Lin.

Simiadae. When last I had occasion to treat of this group, I remarked (*J. A. S. XII, 176,*) that, at that time, the only ascertained species known to inhabit the countries bordering on the Bay of Bengal to the eastward, were the *Hylobates lar*, which I suggested to be the most common species of Gibbon found in the interior of the Tenasserim provinces, as alluded to by Dr. Helfer,—and *H. syndactylus*, which, according to that author, extends as high as 15° N. lat., a statement which, however, it would be satisfactory to have confirmed. It now appears that the *H. lar* is diffused so high as Arracan, where Capt. Abbott, Assistant to the Commissioner of the province, and who is stationed in Ramree, is acquainted both with it and *H.*

hoolock as inhabitants of that island (?). In Arracan, however, the Hoolock is the prevalent species of Gibbon, and extends thence over all the hill ranges of Sylhet and Assam;* while the *lar*, or White-handed species, is found southward to the Straits. The Society has lately received a pale specimen of the Hoolock from Capt. Phayre (Senr. Asst. to the Commissioner of Arracan, and stationed at Sandoway), which closely approaches to that in the Zoological Society's Museum, which was described as a distinct species by the name *H. choromandus*, being, however, a trifle darker, and considerably darker than the very pale example from Assam noticed in X, 839. Another Hoolock in this Museum is again much darker than the Arracan specimen, and we have retained a third of the usual intense black colour all over, with the exception of the constant white band across the forehead.

According to Mr. J. Owen, who resided upwards of two years among the savage Nagas and Abors who inhabit the wooded mountain ranges to the eastward of Upper Assam, the Hoolock abounds in those upland forests, associating in societies of 100 or 150 individuals, the combined noise of which may be heard to an immense distance. In general, they keep to the tops of the highest Oolung and Mackoi trees (*Dipterocarpi*), to the fruit of which they are very partial; but on several occasions, when emerging from a foot-path through the dense forest into the open ravines formed by the action of the mountain rapids, Mr. Owen mentions having come suddenly upon a party of them washing and frolicing in the current, who immediately took alarm and retreated into the jungle: but in one instance, as he was proceeding solitarily along a newly made road through the forest, he found himself surrounded by a large body of them, impelled perhaps as much by curiosity at his European dress and appearance, as by resentment at the intrusion of a stranger upon their domain; the trees on either side were full of them, menacing with their gestures, and uttering shrill cries; and as he passed on, several descended from the trees behind, and followed him along the road; and he feels sure that they would soon have attacked him, had not his superior speed on the

* It is even found in some parts of Mymunseng. Buchanan Hamilton's MSS.: upon the authority of Mr. Dick, formerly Judge and Magistrate of Sylhet.

ground enabled him to escape. Having at first, relates Mr. Owen, to cross a number of felled logs, it was really no easy matter to get away ; but the clear and open road once gained, he was not long in distancing his pursuers. Upon his return, after this threatened attack of the Hoolocks, Mr. Owen asked his Assamese interpreter, (who had been brought up in the hills,) whether it was usual for these Apes to manifest so hostile a disposition ; and he was informed that only a few days before, as a party of Nagas were proceeding along one of the tortuous jungle paths, necessarily in Indian file, the foremost man who was a little ahead of the rest, was actually attacked and severely bitten on the shoulder, and would probably have been killed by his assailants, had not others of his party opportunely come to the rescue, upon which the Hoolocks immediately fled. Indeed I can testify to the capability of these animals to inflict serious injury, from having witnessed a tame female of the Sumatran *H. agilis* suddenly attack her keeper, by springing up at him, grasping his body with her four limbs, and biting at his chest, when it was fortunate for the man that her canines had been previously filed down ; in consequence, as was said, of her having occasioned the death of a man at Macao.* According to Mr. Owen's account, the Hoolocks would also appear capable of destroying large snakes ; for his attention was once arrested by the noise which a party of them were making on the tops of some lofty trees overhead, when after a while he was startled by the fall of a *Python* Snake, of about six or seven feet in length, within a few paces. The reptile was nearly dead, or for that matter might have been disabled by the fall, but it had been severely bitten and lacerated, no doubt by the Hoolocks above, who were unquestionably the cause of its precipitation.

Of the Javanese species (*H. leuciscus*, F. Cuv.), the Society has lately obtained a fine female specimen, the colouring of which is somewhat remarkable, although nearly resembling that of a male described and figured in the unpublished MSS. and drawings of the late Dr. Buchanan Hamilton. General hue pale greyish-brown, or rather

* From what I have seen of the Gibbon tribe when brought up tame, no animals could be more gentle and good-tempered ; but the lady in question had good reason for the utter hatred which she bore to her keeper, who used to make her display her wondrous activity a hundred times a day, in swinging from bough to bough of a large artificial tree by means of her fore-limbs only, by frequent application of the whip.

brownish-grey, darker on the nape, shoulders, and limbs, and the inside of the thighs blackish anteriorly; the outside of the thighs, and the legs and feet above, are pale; the hands are washed with blackish: crown of the head black: a whitish ring encircles the face; the throat, sides of the throat, entire under-parts, and especially the lumbar region, are also whitish, but a dark brownish-grey line extends down each side of the breast and belly, commencing from the arm-pits, and terminating in the blackish inner side of the thighs. As compared with the Hoolock, this species has the coat very much more close and woolly, the hair adhering in flakes, more particularly on the back. That of *H. lar* (the only additional species we possess) is just intermediate.*

I also suggested, upon the same occasion, that the Tenasserim *Semnopithecus maurus* of Helfer would probably prove to be the *S. obscurus*, Reid: and the Society has now received skins of the latter species from Capt. Phayre, and some living young specimens from Capt. Abbott; and the skull of this animal, compared with that of a skeleton prepared from a Tenasserim specimen sent in spirits by the late Dr. Helfer (vide VII, 669), leads me to refer the latter also to the same species, which, it may be remarked, is the only member of its genus as yet ascertained from Arracan southward to the Straits, where (in the vicinity of Singapore) specimens of it were obtained by Mr. Cuming.

* On the subject of Orang-utans, I took the opportunity before referred to, to offer a few remarks (vide pp. 167 and 182). Since then, the Society has fortunately recovered a fine skull of the male *Mias Rambii*, noticed as presented by Major Gregory (VII, 669), which had been missing from their museum, and was consequently unnoticed in my remarks on the genus. I have also lately received a letter from Mr. James Brooke (of the Borneo settlement), wherein that gentleman notices the dark colour of the *Rambii* as compared with the *Pappan* and *Kassar*. He remarks—"I concur in what you say regarding the *Wurmbii* and *Abelii* being referred to one class [species]. The *Kassar* in every specimen which I have seen, is of the same colour as the *Wurmbii* or *Pappan*; but the *Rambii* is of a dark brown in the two I have seen—one an adult female—the other a young but a large male. The *Rambii* is probably intermediate in size to the other two species. I am aware how little general importance is to be attached to colour, but among the very numerous specimens of the *Pappan* and *Kassar* I never found one of this dark colour, whereas the only two specimens of the *Rambii* which have fallen under my notice were both similar and both dark brown. A little further personal enquiry would settle the matter beyond dispute; and I hope soon to have the countries open to me, when I shall feel great pleasure in forwarding you specimens either of skeletons or skins."

The skins adverted to are those of full grown animals, and they accord very well with the description of the species furnished by Mr. Martin ; but two very conspicuous characteristics of the living animal might pass unnoticed in these skins, namely, the variegation of the face, which is of a leaden-black, contrasting with pinkish flesh-colour on the mouth and lips, extending to the lining of the nostrils, besides which a large semi-circular mark of a paler and more livid tint occupies the inner half of each orbit,—and secondly, a longitudinally disposed erect crest upon the vertex, rising abruptly from amid the rest of the hair of that part, and being analogous to that of the Sumatran *S. cristatus*, (Raffles,) with which I should not be surprised to find the present species identical : Raffles, however, says nothing of the variegation of the face, and he remarks that “the young *Chingkaus* are of a reddish-fawn colour, forming a singular contrast with the dark colour of the adults,” whereas very young examples of the present animal agree in colour with full grown ones ; he also mentions that the under part of the body is merely “paler,” while in the Arracan animal this is dull white, and purer white in the young. In adults, the whole hair of the crown is much elongated, the tuft still rising up among the rest ; and that forming the whiskers stands far out on each side, forming lateral peaks in addition to the vertical one. Five examples before me (three of which are alive) exhibit scarcely any difference in shade of colour, all being of a ashy dusky-black, darkest on the head and extremities, a good deal silvered on the back, white underneath or in front, and the tail more or less albescent either at base only, or for the basal half or two-thirds, or even the entire tail ; there is little trace of beard, and the shortish scanty hairs growing upon the flesh-coloured lips are white. The young, besides a whining noise, to express their wants, frequently emit a mewling cry that might be mistaken for the mew of a cat.

To the same group of *Semnopithec*i belongs my *S. pileatus*, *J. A. S.* XII, 174, a species which abounds on the skirts of the Tipperah hills, retiring far into the interior during the rains, (as I am informed by F. Skipwith, Esq., Judge and Magistrate of Tipperah, to whom the Society is indebted for some interesting zoological specimens,) and it would appear also to extend sparingly upon the Naga range eastward of Upper Assam. A fine specimen of an old male has

just been presented to the Society by the Rev. J. Barbe, R. C. Missionary, which was shot by him during his recent visit to the wild Kookie tribes of the Chittagong hills; and the same gentleman had previously favoured us with a more than half-grown male killed in Tipperah. These two differ considerably in shade of colour from the young female formerly described, having the whiskers, throat, chest, and front of the shoulder, very deeply tinged with ferruginous,—the rest of the under-parts, the legs all round (from the knee), and much of the humerus, less so,—and the head and back of a more dingy ash-grey, being sullied with the prevalent rust-colour: the half-grown female before described has merely a faint tinge of ferruginous on its whitish under-parts, and the back and limbs are very delicate pure grey.* In the old male, the tail is of the colour of the back at base, becoming gradually black, which last occupies the terminal third or more: the fingers and toes are blackish, with an admixture of this on the back of the hands: the long black superciliary hairs spread into two lateral masses (in all three specimens,) and are very copious, and between and above them, immediately over the *glabella* or inter-orbital space, the hairs of the forehead are conspicuously tinged with ferruginous: those on the crown are not elongated as in the preceding species, nor is there any trace of vertical crest; but they are a little lengthened beyond those of the occiput, sinciput, and temples, which they accordingly impend, and thus is presented somewhat the appearance of a small flat cap laid on top of the head, whence the specific name. The length of fore-arm and hand (of the adult male), to tip of longest finger, is above a foot; knee to heel nine inches; foot about seven inches: and length of skull about five inches.

As a third continental species of this subgroup, I suspect must be brought together the *S. cephalopterus*, (Zimmerman,) from Ceylon, with which Mr. Martin identifies the *Lion-tailed Monkey* β , and the *Purple-faced Monkey*, of Pennant, the *Guenon à face pourpre* of Buffon, *Simia dentata*, Shaw, *Cercopithecus latibarbatulus* of Geoffroy, Kuhl, and Desmarest, *C. leucoprymnus*, Otto, *Simia fulvo-grisea*, Desmarest, *Simia leucoprymna et S. cephaloptera*, Fischer, *S. nestor*, Bennett, and *S. leucoprymnus et S. nestor*, Lesson, — and the *S.*

* A half grown male just received from Mr. Skipwith is intermediate in its colouring.

Johnii, Fischer, from the Neilgherries, to which Mr. Martin only refers the *S. cucullatus*, Is. Geoffroy. From specimens now before me I think there can be no doubt of the identity of all of these, and that the species both inhabits the Neilgherries and the mountains of Ceylon: but Mr. Martin erroneously identified one specimen in the Paris Museum with the present species, as I have shewn in *J. A. S.* XII, 170; the animal in question being evidently my *S. hypoleucos*, *J. A. S.* X, 839. The name *cephalopterus* would have to be retained, and the animal appears subject to considerable variation of shade; a half-grown female before me resembling Mr. Martin's figure referred to *S. cephalopterus*, except that the croup is pale-grey as stated in the description, the hair there being shorter; and there is an admixture of this on the thighs, and slightly up the back: the whiskers, and hairs on the lips and chin, are dull white; and those of the crown dull chesnut-brown, and lengthening on the occiput: the tail of this is whiter to the end. An old male, on the contrary, has dark dull chesnut-brown whiskers, concolorous with the hair of the crown, and some blackish hairs growing in front of them; and his tail is blacker to the end: the hair on the crown is all elongated, but increasing in length to the occiput, where some of the hairs exceed five inches in length, and tend to be albescent, a sort of dingy isabella colour prevailing, which is not easy to express in words. On the short hair of the croup, and upon the thighs, the same grey colour appears as in the young female specimen, but is mingled with black, and considerably less albescent. The bodies and rest of the limbs of both are deep black, but picked out a little with greyish in the young female. I consider these two specimens to respectively represent the *S. cephalopterus* and *S. Johnii* of Mr. Martin's work, the latter (or old male) being certainly from the Neilgherries, and the other I purchased alive in Calcutta, and could not learn whence it had been brought: but I am quite satisfied of the specific identity of the two, and have seen others variously intermediate. Upon these grounds I venture to bring the two alleged species together.

The other Indian *Semnopithecii* form a particular subgroup, well characterized by their physiognomy; and all of them have a radiating centre of hair on the forehead, a little behind the superciliary ridge. They have been mostly confounded under *S. entellus*.

The most different from the rest is *S. hypoleucos*, Nobis, *J. A. S.* X, 839, and XII, 170; which is characterized by its comparatively small size, deep colouring, and black fore-arms and hands, feet, and tail; the head being of a dirty pale straw-colour. Inhabits the Malabar range and Travancore.

Next, *S. entellus* (verus), F. Cuv., is the representative of the group in Bengal and Assam, extending (as I have been informed) into Cuttack. It has constantly black hands and feet; the fore-arm and leg externally, with the croup, are of a pale *chocolat au lait* colour, extending more or less over the back, humerus, and thigh; and the rest is of a light straw-colour, or pale isabelline, with occasionally a tinge of ferruginous on the belly. It is figured by the late Mr. Bennett in the 'Gardens and Menagerie of the Zoological Society.'

Very different is the *S. priam*, Elliot, of the Coromandel coast, which has nought of the yellowish tinge, the whole back and outside of the limbs, with the crown of the head, being nearly of the *chocolat au lait* hue confined to parts of the former, but having more of the *lait* in it, and as usual being most intense about the croup; the hands and feet are *pale* and concolourous with the rest of the limbs; the whiskers and occiput whitish; and a strongly marked peculiarity consists in having an abruptly rising erect crest upon the vertex, analogous to that of *S. cristatus* (vel? *obscurus*).

The *S. anchises*, Elliot, represents the former in the Deccan and along the foot of the western ghauts. A skin presented to the Society by that gentleman, with three examples of *S. priam*, resembles the darkest specimens of *S. entellus* in colour, but has the leg from the knee whitish (perhaps not a constant distinction), the hands mingled white and blackish, and the feet whitish, with dusky black above the base of the toes and on their terminal phalanges; but the coat generally is much longer than in *S. entellus*, the hairs on the sides measuring four, five, and even six inches in length, and those which grow upon the toes, and in a less degree those of the fingers, which are very copious, are also remarkably elongated, extending considerably beyond the tips of the toes, which thus present a Spaniel-like appearance. Mr. Elliot, to whom the merit is due of first distinguishing these species, and who is well acquainted

with both of them, will shortly describe their characters more minutely.

The same gentleman has also forwarded for my inspection an imperfect skin of a half-grown animal, received from the Coimbatore district or its vicinity, which presents the colouring of true *entellus*, and has the black hands and feet well marked; but the coat is different in texture, the hairs of it being quite straight, and not exhibiting the waviness which is constantly observable in those of *S. entellus* of every age, causing the light to fall irregularly on each hair of the latter species, while on those of the specimen in question, as in *S. anchises*, the shine is uniform, and the same straightness of hair is observable in *S. priam*: this may appear a trivial distinction, but it is nevertheless a well marked one, which at once characterises *S. entellus* apart from either of the others; and I incline to consider, for the present at least, the skin under consideration to be a doubtful variety of *S. anchises*, the more especially as its coat is also longer than in specimens of *S. entellus* of corresponding age.

Another allied species, of which the description does not tally with either of the foregoing, is the *S. schistaceus*, Hodgson, *J. A. S.* IX, 1212, "from the Tarai forest and lower hills, rarely the Kachar also," of Nepal; and which would seem to approach nearest to *S. anchises*. It is described as — "Dark slaty above; below, and the entire head, pale yellow; mere hands and feet somewhat darkened or concolorous with the body above; tail also concolorous: hair on the crown short and radiated; on the cheeks long, directed back, and hiding the ears: piles or fur of one sort, neither harsh nor soft, more or less wavy; three to five and a half inches long upon the body, closer and shorter on the tapered tail, which is more or less tufted."

The Mussoorie Lungoors have been thus described to me by Capt. Thos. Hutton, from whom I hope shortly to receive some specimens. "I fell in," writes that observer (in a letter dated Dec. 30th,) "with a whole lot of Monkeys this morning, and took a leisurely survey of them; they were dark greyish, with pale hands and feet, white head, dark face, white throat and breast, and white tip to the tail. This is I think the Nepal and Simla species. The *Macacus rhesus* is found here also, but I do not remember it in the winter, though it may re-

main in some of the deep warm valleys."* Elsewhere, he remarks, "I have long thought that the *Lungoor* of our parts must be distinct from the *S. entellus* of Bengal, on account of the different locality in which it is found, for assuredly were the *Entellus* to occur here in summer, it would retire to the plains on the approach of winter. Our species, on the contrary, seems to care nothing for the cold; and after a fall of snow a glen on my estate which opens to the N. W. is crowded with them. In fact, I really believe they are more numerous during the cold than during the hot weather. On the Simla side, I observed them also, leaping and playing about while the fir-trees among which they sported were loaded with snow-wreaths. I have seen them at an elevation of little short of 11,000 ft. even in the autumn, when hard frost occurred every night, and that was at Hattoo or Whattoo mountain, *three* marches in the interior from Simla. * * * It grows to a goodly size, and is rather a formidable looking fellow." Captain Hutton's suggestion that the Himalayan *Lungoor* must be different from the Bengal *Hoonuman*, because of the diversity of climate which they inhabit, is in part nullified by the fact that the *Macacus rhesus* inhabits alike the Himalaya and the Bengal Soonderbuns; and it also remains to ascertain how high the *S. entellus* may extend upon the Northern mountains of Assam: moreover it is by no means clear, from the above descriptions, that Capt. Hutton's Mussoorie *Lungoor* is identical with Mr. Hodgson's Nepalese species.

Returning now to the determination of the *Simiada* found eastward of the Bay of Bengal, Dr. Helfer mentions two species of *Macacus*, stating that "the *Cercopithecus cynosurus* [*cynomolgus*?] inhabits chiefly the banks of rivers, and the mangrove forests, being chiefly fond of shell-fish": and that "Another species of *Cercopithecus* belongs to the rarest of this genus, and is found chiefly in the northern parts, upon isolated limestone rocks." There can be little or no doubt that the two following are the species referred to: and to Capt. Phayre is due the credit of first securing specimens of these animals

* In *J. A. S.* VI, 935, Capt. Hutton states, of the *M. rhesus* — "This species I saw repeatedly during the month of February, when the snow was five or six inches deep at Simla, roosting? in the trees at night, on the side of Jakú, and apparently regardless of the cold."—*Journal of a Trip to the Burenda Pass.*

for examination, the Society being already indebted to that gentleman for numerous other specimens of Arracanese mammalia, several of which are new, and for nearly 200 species of birds, besides specimens in other classes, to all of which he is continually fast adding.

Macacus nemestrinus (?) A huge specimen of what I conceive to be merely the common *Pig-tailed Monkey* of authors, numerous in Sumatra, (where three *varieties* of it are alluded to by Raffles, who terms the species *Simia carpolegus*), if not also in other parts of the Malayan archipelago and peninsula, differs from ordinary specimens of its race, such as are commonly seen in captivity, in the development of its coat of hair, especially on the fore-quarters,—in having the crown merely infuscated, instead of black (or nearly so),—and in the terminal tuft of its tail being bright ferruginous; besides which, there is a strong tinge of golden-ferruginous about the shoulders. The coat is fine in texture, and upon the fore-quarters the hairs of it measure from four to five inches long; on the loins they scarcely exceed two inches, and on the under-parts are comparatively scanty; the general colour being that prevalent among the *Macaci*, or grizzled brown, the piles annulated with dusky and fulvous; crown darker, and the middle of the back posterior to the lengthened hair is also darker, becoming black along the upper surface of the tail, which has a bright ferruginous tuft as before noticed: but there is no trace of this upon a very young specimen also sent, which has likewise little appearance of annulation to its fur, and the colours generally are subdued and much paler. A live example (of undoubted *nemestrinus*) which I possess, about a third grown, begins to shew the grizzling or annulation to the fur of its fore-quarters, but no sign as yet of the rufous tail-tip. Upon the whole, the very large fine specimen under consideration, does not differ more from ordinary domesticated examples of the *Pig-tailed Monkey*, than does an unusually fine wild old male of the *M. rhesus* which I procured some time ago in this vicinity, from such domesticated specimens of the latter as must be familiar to the observation of most naturalists who are conversant with the study of mammalia. Capt. Phayre obtained these animals in a mountainous and rocky situation, and it is doubtless Dr. Helfer's second species of (so called) *Cercopithecus*. It belongs, indeed, (as does also *M. rhesus*.) to the division *Papio* of Mr. Ogilby, which comprehends all the short-tailed *Macaci* of Cuvier; but

not, as I suspect, to the *Papio* of Prof. Owen,* which I have reason to believe applies to the long-tailed African Baboons, or the *Cynocephali*, Auctorum, exclusive of *C. mormon* and *leucophæus*, on the Mandrill and Drill: whereas the long-tailed *Macaci*, such as the next species, together with *M. radiatus* and *M. sinicus* of S. India, are referred by Mr. Ogilby to *Cercopithecus*. But the truth is, that if we once commence dividing the group *Macacus*, as now generally recognised, nearly every species of it might be selected as a subgeneric type *per se*, presenting various peculiarities of its own (*e. g.* *M. niger*, *nemestrinus*, *silenus*, *rhesus*, *cynomolgus*, *radiatus* with *sinicus*, and perhaps others with which I am less familiar): and I certainly much prefer the currently adopted system of restricting *Cercopithecus* to the numerous African species which want the fifth tubercle to the last inferior molar, and follow Mr. Martin in appropriating the name *Cercocebus* to those other long-tailed African species which are known as the *Mangabeys*, or white-eyelid monkeys, of which three have now been ascertained,—an arrangement which has the advantage of according with the geographical distribution of these animals, and by which, too, any of them may be classified at a glance at their exterior, by those who are familiar with the subject.†

M. cynomolgus (?) Though possessing living examples of both the *M. nemestrinus* and *M. cynomolgus*, I have found great difficulty in determining the skins sent by Capt. Phayre, which I refer to these species, in consequence of the mode of preparation of them, the skulls having been taken out, and the faces irreparably injured; but after full consideration, I feel confident that the present one is correctly assigned, if not the other also. A pair of skulls of this are sent, from which the following dimensions are taken. That of an adult male measures four inches and three-quarters in total length, inclusive of the protruding incisor-teeth; greatest breadth (of *zygomæ*) three inches; vertical height (including lower jaw) three inches and one-eighth; length of bony palate an inch and seven-eighths; breadth of ditto three quarters of an inch. The corresponding measurements of a female

* Mentioned in the *Report on British Fossil Mammalia*, published in the "Report of the British Association" for 1842, p. 55.

† If I mistake not, the tail is in *Cercopithecus* and *Cercocebus* of constant proportional length, being much longer than in any *Macacus*.

skull are—four inches and three-quarters, two and seven-eighths, three inches, one and five-eighths, and nearly three quarters of an inch. The upper canines of the male project nearly five-eighths of an inch from the bony socket. Capt. Phayre sent the following note respecting the habits of this animal. “These monkeys frequent the banks of salt-water creeks, and devour shell-fish. In the cheek-pouch of the female were found the claws and body of a crab”: accordingly, there can be little hesitation in identifying it with the other species of *Dr. Helfer*, to which the same habits were assigned.

Of the species of this genus, one only appears to inhabit Bengal, the *M. rhesus*, which is numerous in the Soonderbuns, where its habits I suspect pretty much resemble those of *M. cynomolgus*: it frequents thick jungly situations, particularly about the borders of narrow gullies, and to escape pursuit will sometimes plunge into the water from an overhanging tree, swim to some distance beneath the surface, and then land and make off on the opposite bank. The Hoonuman, on the contrary, would appear never to enter the water. The *M. rhesus* also occurs, as we have seen, even on the Himalaya so far westward as Simla, and Mr. Hodgson has sent it from Nepal, where I cannot help suspecting that (in different phases,) it constitutes both his *M. oinops* and *M. pelops*, *J. A. S. IX*, 1213; and it is included in Dr. Walker's list of the mammalia of Assam, (*Calc. Journ. Nat. Hist. II*, 265,) together with another species discovered in that part by Dr. McClelland, and described as *M. assamensis* in *Proc. Zool. Soc.* 1839, p. 148. Still further to the N. W., “Monkeys” are stated by Elphinstone to be found only in the north-eastern part of Affghanistan: but no *Simiadæ* are included in an elaborate paper on the mammalia of that country, prepared by Capt. Thos. Hutton for publication in this Journal, nor have I seen any subsequent notice of their occurrence in that vicinity. In the Indian peninsula generally, the common species of *Macacus* is the *M. radiatus*, being the only one included in the catalogues of Messrs. Sykes and Elliot; but *M. sinicus* is likewise found in the southernmost part and in Ceylon, as is also the *M. silenus*.

The following is a brief synopsis of the Indian species of *Simiadæ*, with those of Assam, Arracan, and the Tenasserim provinces, as far as they are at present ascertained:—

1. *Hylobates syndactylus*; *Simia syndactyla*, Raffles. Stated by Helfer to extend as high as 15° N. Lat.

2. *H. lar*. Common in the Tenasserim provinces, and extending northward into Arracan, and southward to the Straits.

3. *H. hoolock*. Hill ranges of Assam, Sylhet, and Arracan.

4. *Semnopithecus entellus*, F. Cuv. Separate, apart, wider Bengal and Assam; Cuttack?

5. *S. anchises*, Elliot. Central table land of the Indian peninsula, and base of the western ghauts.

6. *S. schistaceus*, Hodgson. Nepal: the species of the western Himalaya perhaps different.

7. *S. priam*, Elliot. Coromandel coast.

8. *S. hypoleucos*, Nobis. Travancore and Malabar range.

9. *S. pileatus*, Nobis. Tipperah and Chittagong hills; Naga range.

10. *S. cephalopterus*, (Zimmerman). Ceylon and Neilgherries.

11. *S. obscurus*, Reid. (*S. cristatus*? Raffles.) Arracan, Tenasserim, extending southward to the Straits, and probably Sumatra.*

12. *Macacus silenus*. Ceylon, and neighbouring districts of the continent of India.

13. *M. nemestrinus* (?) Arracan, Tenasserim.

14. *M. rhesus*. Bengal, Assam, Nepal, Simla.

15. *M. assamensis*. Assam.

16. *M. cynomolgus* (?) Arracan, Tenasserim.

17. *M. radiatus*. Peninsula of India.

18. *M. sinicus*. Southernmost part of ditto, and Ceylon.†

Although I have here followed the usual order of classifying these three groups, I am nevertheless of opinion that the division comprising the *Cyncoepiali*, *Macaci*, and *Cercopitheci*, (*i. e.* the genera with cheek-pouches,) should precede that of the *Semnopitheci* and *Colobi* (or the genera with sacculated stomachs). The facial angle can no longer be considered as a guide to the relative elevation of these animals in the scale of being, now that the adult Orangs, for example,

* The *Semn.* (or *Presbytis*) *nobilis*, Gray, *Ann. and Mag. Nat. Hist.* 1842, p. 256, I cannot but regard as requiring confirmation as an inhabitant of India proper.

† This is doubtless the species noticed by Mrs. Graham in Ceylon, where that lady mentions "Swarms of red Monkeys playing in the trees overhead." (*Journal of a Residence in India*, p. 104.) I have reason to conclude also that this, and not the Lungoor, is the *Rollewai* of the Singhalese.

are known to present so very prominent a muzzle, while, on the other hand, the lowest of all the *Simiadæ*, or the American Marmozets, have the same so inconsiderably developed; and it would seem that some trivial resemblance which the Semnotes bear to the Gibbons is now the chief inducement that occasions the former to be still placed next to the group of tail-less Apes, and thus to precede the third great division of old world Monkeys and Baboons, which is characterized by possessing cheek-pouches. But this third division unquestionably presents a nearer structural approach to the first than does the second; and, so far as I have observed, the intellect is also decidedly of a superior grade. I have next to describe an apparently new species of the African genus *Cercopithecus*.

Cercopithecus chrysurus, Nobis. This belongs to the particular minor group exemplified by *C. sabæus*, and would seem to be nearly allied both to that species and to the *C. tantalus*, Ogilby, *P. Z. S.* 1841, p. 33, the tail of which is stated in the Latin diagnosis to be yellow at tip, while in the more detailed vernacular description this is said to be "brown at the base, light grey at the tip." In the species now described, the terminal third of the tail is bright yellowish-ferruginous, as I believe in *C. sabæus*. The specimen is a male, and measures about nineteen inches from forehead to base of tail, the tail about twenty-four inches; from elbow to tip of hand nine inches, knee to heel seven and a quarter, and foot five inches. Colour grizzled yellowish-brown, the hair fine and soft at base, with the terminal half comparatively coarse and rigid, and broadly annulated first with black, then fulvous, and finally tipped with black; for the most part about two inches and a quarter long, but exceeding three inches on the sides towards the flanks: the whiskers, with the entire under-parts and inside of the limbs, are dingy yellowish-white: the fore-arm and leg greyer, or less yellowish than the parts above; and the hands and feet infuscated. Face almost naked, having only a few scattered hairs; but a narrow supercilium of long black hairs across the brow. The upper surface of the tail is rather darker than the back for the first two-thirds of its length, and then passes into bright yellowish-ferruginous, which on the under surface of the tail is continued nearly to its base, weakening however in intensity; the extreme tip of the tail is wanting in the specimen.

Length of the skull four inches and a half, and breadth across the *zygomæ* two inches and three-quarters; vertical height two inches and five-eighths; length of bony palate an inch and a half, and breadth seven-eighths of an inch. Habitat unknown.

Lemuridæ. The *Stenops gracilis* is usually assigned to Ceylon, and the *Nycticebus tardigradus* to Bengal. The latter, however, certainly does not occur in the lower part of Bengal, but may perhaps exist in the hilly regions. Dr. Walker includes it in his catalogue of Assamese Mammalia; and upon referring to the late Dr. Buchanan Hamilton's MSS., I find what I consider to mean this species, noticed as occurring in Chittagong, where it is said to be rare and solitary, inhabiting trees: in Rungpore, also, very scarce, and said to have been seen in the hilly countries to the south and east of the Boorhampooter by some natives, who recognised it by the Hindustanee name *Shiriminda Billi*; "bashful or shame-faced Cat," a name which I have also heard applied to it. The unobtrusive, nocturnal habits of this animal would, however, always cause it to be little observed. I believe that it is "the little *Bradypus*" of Dr. Helfer's 'Note on the Animal productions of the Tenasserim provinces,' being commonly designated "Sloth" by Europeans: and the territories eastward of the Bay constitute, I suspect, its chief habitat. A pair of the *Stenops gracilis* were offered to me in the Madras bazar, at the low price of a rupee; but I have seen no notice of this species as an ascertained inhabitant of the peninsula.* Here, in Calcutta, a dealer would ask at least ten rupees for a pair either of them or of the *Nycticebus*, and in all probability double as much.† They are, indeed, but seldom brought for sale in this emporium: and it is probable that the *Nycticebus*, if found at all in Bengal, occurs sparingly only a little within the confines of the province.

Vespertilionidæ.—The only Bat contained among Dr. Helfer's Tenasserim specimens was *Pteropus javanicus*, which, with *Nycticebus Temminckii*, he stated to be "amongst the rarer species found in the provinces"; and he alludes vaguely to other species of *Pteropus*, *Phyllostomus* (meaning probably *Megaderma*), and *Nyctinomus* (or

* It is included in Mr. Elliot's new catalogue of the mammalia of peninsular India.

† A pair of the *Stenops* said to have been brought from *Singapore*, have just been put up at auction at 60 Rupees! The *Nycticebus* is common in Arracan.

Dysopes). The Society has received *Pt. medius* (vel *Edwardsii*, Desm., apud Ogilby and others, though Edwards's specimen was from the Mauritius, and should therefore, I suspect, be the *Pt. edulis*,*) from Arracan, Tipperah, and Assam, where I cannot help considering the *Pt. assamensis* described by Messrs. McClelland and Horsfield to present merely an individual variation. The same appears to be Dr. Walker's opinion, as *Pt. Edwardsii* alone is included in his list of Assamese mammalia. Mr. Hodgson has also sent it from Nepal as his *Pt. leucocephalus* (*J. A. S.* IV, 700), together with the *Cynopterus marginatus* as his *Pt. pyrivorus* (*ibid.*), which latter has likewise been received by the Society from Assam and Arracan, and both of these species appear to be common throughout India; the former also doubtless constituting the large "Flying Fox" so abundant in the Maldives and Laccadives. The third Indian species of frugivorous Bat, *Pt. Dussumieri*, (of which a description will be found in XII, 176,) is still wanting to the Society's collection.

Of *Cynopterus marginatus*, I have been keeping three live females for several weeks. They are exclusively frugivorous, and take no notice of the buzz of an insect held to them; which I remark in reference to a statement of Mr. Gray, that the nearly allied little Kiodote is partly insectivorous: this I doubt very much. The *Cynopterus* is a very ravenous eater, and will devour more than its own weight at a meal, voiding its food but little changed as excrement, while still slowly munching away. Of guava it swallows the juice only (though a soft mellow fruit), opening and closing its jaws very leisurely in the act of mastication, and rejecting the residue. The flight of this Bat is particularly light and buoyant, far different from the measured rowing, the direct and heavy flight of the large *Pteropus*; but the general manners and the voice of the two are very similar.†

The other Indian *Vespertilionidæ* fall into three principal groups; viz

* The Mauritius species is styled *Pt. vulgaris*, v. *rubricollis*, Geoff., in *P. Z. S.* 1831, p. 45.

† After a while, the three caged females mentioned above attracted a male, who used to be continually hovering about their cage of an evening, and at length took up his diurnal residence hitching to a rafter above a dark staircase close by, where one of the females who escaped immediately joined him, and they continued to retreat there regularly for some days, when both were caught.

—*Rhinolophinæ*, comprising the genera *Megaderma*, *Rhinolophus* and *Hipposideros*, and *Nycteris* (which at least is a Malayan genus),—*Dysopodinæ*, including *Dysopes*, (with its various subdivisions, as *Cheiromeles*, &c.,) *Taphozous*, and *Rhinopoma*,—and *Vespertilioninæ*, or the ordinary Bats.

The *Megaderma lyra* appears to be a common species throughout India, and I have described its habit of preying on smaller Bats, first sucking their blood, in XI, 255. In reference to that paper, Mr. Frith informs me that a number of these Bats were in the habit of resorting to the verandah of his residence in Mymunseng, and that every morning the ground under them was strewed with the hind-quarters of frogs, and the wings of large grasshoppers and crickets: on one occasion the remains of a small fish were observed; but frogs appeared to constitute their chief diet—never toads: and of a quiet evening these animals could be distinctly heard crunching the heads and smaller bones of their victims. Other species of Bats were noticed to keep aloof from this retreat, but Mr. Frith had no opportunity of confirming my observation that the *Megaderma* preys upon smaller animals of its tribe. The disproportion of the sexes in the assemblages of this species in their diurnal retreats is noticed in XI, 600; and indeed I think that the same pretty nearly holds throughout the family. In Mr. Elliot's catalogue, the name *carnatica* is proposed, with a mark of doubt, for the *Megaderma* of S. India, which however is perfectly identical with that of Calcutta.

Rhinolophus, Geoff. and Cuv. In preparing a notice of the Indian species of this difficult genus, so far as I am acquainted with them, I labour under the considerable disadvantage of not having M. Temminck's valuable monograph to refer to; but I will nevertheless endeavour to review the history of the group, so far as the means at my disposal will permit of. The first endeavour at collating the species would appear to be that of M. Geoffroy St. Hilaire, in the 'Annales du Museum,' tom. XX, pp. 254 *et seq.* (1813). Four species are there noticed, in addition to the two common in Europe*; and among the former is a species from Timor, the *Rhinolophe crumènière* of M.

* A third European species, found towards the South (in Dalmatia, Sicily, &c.,) also in the Levantine countries, and it would appear all Africa, is the *Rh. capensis*, Licht., *Rh. clivosus*, Rupp., v. *Rh. Geoffroyi*, A. Smith.

M. Péron and Lesueur, which I conceive to be erroneously identified with the *Vespertilio speoris* of Schneider, described to inhabit India, as it differs from the latter in its considerably larger size, and (it would seem) more rufous colouring.

In the second edition of Cuvier's 'Regne Animal' (dated 1829), these six species only are referred to: but Dr. Horsfield, in his 'Zoological Researches in Java' (dated 1824), had described seven (alleged) species as inhabitants of that island, two of which have since been brought together by Mr. Gray, after an examination of the original specimens collected by Dr. Horsfield,—*Rh. deformis*, Horsfield, being thus identified with *Rh. insignis*, Horsfield.

Then followed M. Temminck's Monograph of the genus, wherein (if I remember rightly) several species were added to those of his predecessors; of which, among perhaps others unnoticed in Mr. Gray's subsequent synopsis, I find mentioned by authors a *Rh. luctus*, Tem., from Java, an alleged rufous variety of which is described in the Zoology of the Voyage of *la Favorite*, from Manilla,—also a *Rh. pusillus*, from India, which appellation is referred with a mark of doubt to a specimen in the Zoological Society's Museum, in Mr. Waterhouse's Catalogue of the mammalia preserved in that collection,—where also is mentioned, but likewise with a mark of doubt, *Rh. insignis*, Horsf., from Ceylon.

Confining ourselves now to the describers of Asiatic species*, Col. Sykes, in the Proceedings of the Zoological Society for 1831, describes a *Rh. dukhunensis*, distinguishing this from the *Rhinolophe crumèniifère* of Péron and Lesueur, which, it is added, is the *Rhin. marsupialis* of M. Geoffroy's lectures, and the *Rh. speoris* of M. Desmarest, by its much smaller size, &c.; but this smaller size corresponds with the original description of *Vesp. speoris* from India, the colour of which is however stated to be "pale yellowish ash-brown" (apud Shaw), which does not apply well to either, though better to that of India: and I have little doubt that Col. Sykes's species is the true *speoris*, to which *dukhunensis* would therefore be referred as a synonym, as likewise the subsequent names *apiculatus*, Gray, for the male, and *penicillatus*, Gray, for the female.

* The form is peculiar to the Old World, inclusive however of Australia (apud J. E. Gray).

Mr. Hodgson, in the Society's Journal for 1835, next described a *Rh. armiger* and *Rh. tragatus* from Nepal; but the former of these appears to be identical with the Javanese *Rh. nobilis* of Horsfield. The same naturalist more recently obtained three other species from that province, and has described one of them by the name *perniger*, in *J. A. S.* XII, 414; but I suspect that this is identical with *Rh. luctus* of Temminck.

We now come to Mr. Gray's "Revision of the genera of Bats, and descriptions of some new genera and species," published in the 'Magazine of Zoology and Botany,' No. XII. In this paper the *Rh. vulgaris*, Horsf., is mentioned as inhabiting India, and besides the *Rh. apiculatus* and *Rh. penicillatus*, Gray, both of which I have referred to *speoris* verus v. *dukhunensis* of Sykes, two other species from India are described as new, from specimens procured by Walter Elliot, Esq., Madras C. S., and these are also given in the latter gentleman's valuable "Catalogue of the Mammalia of the Southern Mahratta country," published in the 'Madras Journal of Literature and Science,' No. XXIV, pp. 98-9, one of them however by a different and more appropriate name.

Such appears to be the amount of information hitherto published relative to the Indian *Rhinolophi*, which I shall now proceed to reduce and classify, and enrich by the addition of several new species.

The various Indian and Malayan members of this group fall into two marked divisions, corresponding to *Rhinolophus*, Gray, as restricted, (the *Noctilio*, apud Bechstein, according to Mr. Gray,) and the *Hipposideros*, Gray, v. *Phyllorhina*, Bonap., apud Gray.

The former is exemplified by the three European species, and by the Javanese *Rh. affinis* and *Rh. minor*, Horsf., in addition to which only two species are indicated by Mr. Gray, the *Rh. megaphyllus*, Gray, (*P. Z. S.* 1834, p. 52,) from Australia, and *Rh. griseus*, Meyer, habitat not ascertained. In this group, the facial crests are more prominently developed, and terminate in an angular peak above, within and anterior to which is a second leaf of membrane, in general also peaked, and attached behind by a vertical (*i. e.* longitudinally disposed) connecting membrane, which last is sometimes developed beyond the lesser transverse leaf, in front of it, and each undergoes considerable modification in the various species: the nasal apertures appear linear,

from being partly overlapped by membrane, which lines and surrounds the centre of the facial depression, between the latter and the nostrils ; outside of the nostrils the face is bordered by a layer of membrane surrounding it in front in shape of a horse-shoe. The ears in this group are large, ample, and apiculated, having the point directed outward, and (as Mr. Hodgson remarks of the *Rhinolophi* generally,) are "tremblingly alive all over:" the conch is continued round in front to form an anti-helix, which is separated apart by an emargination, sometimes very deep, but should not be confounded (as it occasionally has been) with the *tragus* of various other Bats. As many as six species inhabit India, all of which (unless *Rh. pusillus* be among them) seem different from those heretofore described.

The first is remarkable for having a conspicuous transverse leaflet with a septum behind and above it, situate upon the larger or posterior peaked membrane, and considerably above the lesser or anterior one ; but this is only a modification and development of what is more or less observable in the others. The posterior peak reaches to between the ears and even beyond.

1. *Rh. mitratus*, Nobis. Length four inches, of which the tail measures an inch and a half ; of another specimen three inches and one-eighth, the tail an inch and a quarter. Expanse (of the former) probably twelve inches ; length of fore-arm respectively two and a quarter, and two and one-eighth ; of longest finger three and one-eighth, and three inches ; of tibia an inch ; and tarse with claw, half an inch. Ears large and ample, measuring an inch to point anteriorly, the anti-helix moderately developed, but separated apart by only a slight emargination. Fur of the upper-parts a rich light brown, paler at base, excessively soft and delicate, and rather long ; of the under-parts shorter and much paler. Anterior nose-leaf subovate, or nearly rounded, contracted at base, and a conspicuous lappet of membrane is given off from each side of the centre of the facial depression, overhanging the nostrils, and forming a round mesial cup ; vertical membrane posterior to the lesser nose-leaf little developed, and supporting its base only ; the uppermost or hindmost peak triangular and acute at tip, reaching beyond the base of the ears between the two, and divided by a mesial septum, but little overlapped at base by a second small transverse lamina which occurs also in most of the other species, and is placed

beyond and above the vertical membrane which supports the inner or anterior nose-leaf. This fine species was procured by Capt. Tickell in the neighbourhood of Chyebassa, in Central India.

2. *Rh. perniger*, Hodgson, *J. A. S.* XII, 414.* Distinguished by its large size, and delicately soft and long, curly, blackish fur, having a slight ashy cast from the hairs being thus tipped. A fine specimen which I saw in Dr. Griffith's possession, from Cherra-Poonjee (Sylhet), and which has since been forwarded by him to the museum of the Hon'ble Company in London, measured five inches from muzzle to extremity of foot. The only example now before me is too much injured about the head to permit of a description being taken of the peculiarities of its facial membranes; and Mr. Hodgson's account, excepting as regards size and colouring, applies, for the most part, to the species generally of the present subgroup. The length of the forearm in the latter specimen (which was presented to the Society by Mr. Hodgson,) is two inches and three-quarters, and of tibia an inch and three-eighths. Inhabits the central region of the sub-Himalayas.

3. *Rh. tragatus*,† Hodgson, *J. A. S.* IV, 699. This species was so named in reference to the development of its anti-helix, as compared with the very slight indication of one traceable in *Hipposideros armiger* (v. *nobilis* ?); but the appellation is far from being felicitous, as the anti-helix (not tragus, as indeed was duly pointed out by Mr. Hodgson,) is less developed than is usual in the present subgroup. Mr. Hodgson described this Bat to be "uniform deep brown, with the tips paler and rusty;" but two of three specimens sent by him are certainly of a light brown, and one of them, more particularly, has the upper parts tipped with dull maronne, which produces a general shade

* Probably the *Rh. luctus*, Tem., of which I can get at no description, though Mr. Gray alludes to it as stated to be black with an ashy tinge; vide 'Annals and Magazine of Natural History' for 1842, p. 257, where Mr. Gray describes a *Rh. morio* from Malacca, Singapore. "The front central lobe of the nose-leaf large, three-lobed; fur reddish-brown. Very like *Rh. luctus* in general appearance, and perhaps the colour may have changed by the specimen having been taken from spirits." Why therefore impose a new name, or at any rate why not put a mark of doubt after the word *morio*, and add *Rh. luctus*, Tem., var.? Most probably this is the *Rh. luctus*, Tem., var. *rufus*, from Manilla, of MM. Eydoux and Gervais, in the Zoology of the Voyage of *la Favorite*.—*Rh. luctus* is described from Java.

† Misprinted *torquatus* in Mr. Gray's "Revision."

of this colour, as in several other species both of *Rhinolophus* and *Hipposideros*. The central nose-leaf is small and narrow, and a little expanded at the summit; the nasal orifices are fringed externally with a lappet of membrane; and the uppermost peak of the membrane, above the nose-leaf, is inconspicuous, being almost concealed by the fur of the forehead. Length of fore-arm two inches and a quarter, and of tibia an inch and one-sixteenth. Inhabits the central region of Nepal.

4. *Rh. macrotis*, Hodgson, MS. This and the two succeeding species are of small size, and one of them may perhaps be the doubtfully cited *Rh. pusillus* of Mr. Waterhouse. In that now under consideration, the anterior nose-leaf approaches in form to that of *Rh. tragatus*, but is proportionally larger and wider, nearly twice as long as broad, and rounded without expanding at the summit, which is scarcely so high as the pointed tip of the posterior vertical membrane that connects the nose-leaf with the face; behind or above this again, are three successive lappets of membrane, the first of them incomplete, and the last or hindmost peak is obtusely pointed: the nareal orifices are oblong, or rather kidney-shaped, with no lappet of membrane bordering their outer side, but the usual horse-shoe-shaped development overhangs the upper lip. Mr. Hodgson describes the species as follows:—"General structure typical? No pubic teats. Distinguished by the large size of the ears, which are longer than the head, broad, oval, with pointed recurved tips, and large obtusely rounded-second ears [anti-helix]. Colour sooty-brown, much paler and dusky-hoary below.* Snout to base of tail an inch and three-quarters; head three-quarters of an inch: ears from antea base fifteen-sixteenths of an inch; interval of ears a quarter of an inch: tail three-quarters of an inch, completely enveloped in the square membrane: arm an inch; fore-arm an inch and a half; longest or second finger two inches and five-sixteenths: femur eleven-sixteenths; tibia the same; expanse nine and three-quarters; weight one-third of an ounce. Habitat Nepal." The following are the dimensions of one of the

* This description does not apply, however, to the specimens with which Mr. Hodgson has favored the Society, and which are of a light earthy olive-brown (one of them verging on isabelline), and paler below.

specimens presented to the Society by Mr. Hodgson. From muzzle to base of tail an inch and five-eighths, the tail exceeding five-eighths; ears anteally five-eighths; fore-arm an inch and five-eighths; longest finger two inches and a quarter; tibia exceeding five-eighths of an inch; and foot with claws three-eighths.

5. *Rh. subbadius*, Hodgson, MS.; mentioned as *Vespertilio subbadius*, H., in *J. A. S.*, X., 908. In this species, the anterior nose-leaf is very small, oblong, and rounded above, but the vertical membrane behind it is conspicuously developed, and pointed posteriorly; behind this again, is a short and broad transverse membrane, divided into two lateral lobes, and as usual some long straight hairs grow from this part; and lastly, there is the hindmost angular peak, the sides of which are slightly emarginated towards the point: the nostrils are not externally fringed with membrane; and over the lip is the usual horse-shoe. Mr. Hodgson thus describes the species:—"No pubic teats. Ears no longer than head, truncated at tip [or rather, they are somewhat obtusely pointed], ovoid. Nasal appendage quadrate, not salient, with a transverse bar nearly surmounting it towards the head. Colour a medial clear brown, paler below, and especially on the head and face. Snout to vent an inch and a half; tail an inch and a quarter; head five-eighths of an inch; ears the same; expanse seven and a half; fore-arm an inch and a quarter; longest finger two and a quarter; the foot and nails three-eighths of an inch. Habitat Nepal." The admeasurements of a specimen presented by Mr. Hodgson are—muzzle to vent an inch and a quarter; tail five-eighths of an inch; head the same; ears anteally half an inch; fore-arm an inch and three-eighths; longest finger one and seven-eighths; tibia nearly five-eighths of an inch; foot and nails five-sixteenths of an inch. Inhabits Nepal.

6. *Rh. lepidus*, Nobis. A good deal allied to the last, but distinguished by its much paler colour, longer fore-arm, and especially by the uppermost and hindmost peak of the facial membranes being much less evenly angular, having its sides so considerably emarginated towards the tip, that the latter appears as a narrow terminal prolongation, one-sixteenth of an inch in length; the vertical membrane posterior to and adjoining the anterior nose-leaf is also still more developed and

obtusely angulated behind ; and there is a slight fold of membrane exterior to the nostrils. Ears large, and of the usual form, measuring nearly five-eighths of an inch from antea base to tip, and having a well developed anti-helix. General hue pale isabella-brown, the fur of the upper parts tinged with dull maronne towards the tips, imparting a shade of that colour ; under-parts still lighter, and the fur shorter : membranes apparently dark. Length an inch and three-quarters ; of tail half an inch more ; and extent about nine inches : forearm an inch and five-eighths, longest finger two and a quarter, and tibia above five-eighths of an inch. The specimen (in spirits), and an injured skin of apparently the same species, were both probably obtained in the vicinity of Calcutta.

Hipposideros, Gray. This seems a perfectly distinct group, characterized by a totally different form of facial crest from that observable in the preceding series. The general form of this is quadrate, surmounted by a short and broad transverse membrane recurved along the edge, and over this, in the males (I suspect always,) is a round sinus or cavity with a transverse semicircular opening. " This cavity," remarks Mr. Elliot, " the animal can turn out at pleasure, like the finger of a glove ; it is lined with a pencil of stiff hairs, and secretes a yellow substance like wax. When alarmed, the animal opens this cavity and blows it out, during which it is protruded and withdrawn at each breathing. Temminck notices it under the name of a syphon, or purse, in *Rh. insignis* and *Rh. speoris*" (apud Geoffroy)*. The entire facial crest has been well compared by Mr. Hodgson to " a coat of arms, with double field" ; the superior and inferior fields separated by a trilobate fleshy ridge, below which are situate the nostrils in a deep cavity, surrounded by the membrane which forms the lower field, both within and exterior to which are, in some species, additional laminae of membrane. The ears in this group are, in general, less apiculated, and sometimes rounded, and the conch is not continued round to form an anti-helix.

* It is probable that the development of this sinus, and also of the throat-sac of the *Taphozoi*, depends much on season, like the infra-orbital cavities of various ruminants and analogous glandulous follicles in many other animals.

Some have a more complex membrane surrounding the nostrils, and three small lateral fringes of membrane exterior to the nose-leaf.

1. *H. armiger*, (Hodgson), *J. A. S.* IV, 699. Very closely allied to, if not identical with, *H. nobilis*, (Horsfield). I cannot, however, perceive that "the hairs of the axilla, hypochondria, and scapular marks, are nearly white," as stated of the Javanese species. Colour uniform light brown, with dark maronne tips to the fur of the upper-parts. Length of fore-arm (of a large specimen) three inches and five-eighths, and of tibia an inch and a half. Inhabits the central region of Nepal.

2. *H. larvatus*, (? Horsfield). A species which I have little hesitation in identifying with this, has the fur of a brighter ferruginous than is represented in Dr. Horsfield's two figures, and the under-parts more particularly are much deeper-coloured than would appear from the second figure of the plate adverted to. The fur of the upper-parts is vivid fulvous, more or less tinged with maronne upon the back, and weaker towards the base of the hairs; that of the under-parts being somewhat less intense: membranes dusky, but it would seem tinged with the prevalent hue of the fur. Length about four inches, of which the tail measures one and a quarter: fore-arm two inches and a half; longest finger three and a quarter; tibia an inch and one-sixteenth; foot with claws five-eighths of an inch: ears angulated, measuring anteally seven-eighths of an inch to tip, and three-quarters of an inch broad, length of head an inch. Both in this species and the last there is a minute false molar anterior to the carnassier in the upper jaw, which appears to be wanting in those which follow. Inhabits Arracan, whence forwarded to the Society's Museum by Capt. Phayre, to whom we are likewise indebted for the next species.

3. *H. vulgaris*, (? Horsfield); a species mentioned by Mr. Gray as inhabiting India. It differs from the last in being rather smaller, and of a brown colour above, much paler at the base of the hairs and at their extreme tips; and lighter-coloured below: the ears more apiculated, or rather they appear so from being strongly emarginated externally towards the tip: the tail and interfemoral membrane would likewise seem to be shorter, but the latter has been withdrawn from

the skin in the dry specimen before me, which, as before mentioned, was received from Arracan. Length of fore-arm two inches and a quarter, and of tibia an inch; ears anteally three-quarters of an inch, and nearly as much broad.

4. *H. speoris*: *Vesp. speoris*, Schneider, but evidently not of M. Desmarest, which is *Rh. marsupialis* of M. Geoffroy's lectures, founded on the *Rhinolophe crumenifère* of Lesson and Lesueur: *Rh. Dukkunensis*, Sykes, *P. Z. S.* 1831, p. 99: *H. apiculatus*, Gray, the male, and *H. penicillatus*, Gray, the female, *Mag. Zool. and Bot.* No. XII. For description, vide Elliot, in *Madras Jl.* No. XXIV, 98. Colour nearly as in *H. armiger* (*v. nobilis?*): length of fore-arm two inches, and of tibia an inch. Inhabits Southern India.

This species is approximated to *H. insignis*, (Horsf.) in Mr. Gray's paper, and it may be the doubtfully cited *H. insignis* from Ceylon of Mr. Waterhouse's Catalogue of the Mammalia in the Zoological Society's Museum.

Others have the facial crests altogether less complicated, and no fringes of membrane exterior to the nose-leaf.

5. *H. fulvus*, Gray, *Mag. Zool. and Bot.*, No. XII; *Rh. fulgens*, Elliot, *Madras Jl.*, No. XXIV, 99. This is perhaps the most vividly coloured of the whole class of Mammalia; at least I know of no species which can at all compete with it for brilliancy of hue. The colour of the fur is here alluded to, for that of the naked skin of the Mandrill and of certain *Cercopithec*i can scarcely be surpassed. The general tint of the fur is splendidly bright ferruginous, that of the upper-parts being slightly tipped with a darker shade; membranes dusky. Length, according to Mr. Elliot, an inch and nine-tenths, of tail nine-tenths of an inch; expanse ten inches and a half: weight 4 dr. 20 gr.: fore-arm an inch and five-eighths; longest finger one and a half; tibia three-quarters of an inch; foot (minus claws) a quarter of an inch: ears anteally eleven-sixteenths of an inch, and the same across; their form scarcely apiculated. Inhabits Southern India, where very rare.

6. *H. murinus*, Gray, *ibid.*; *Rh. murinus*, Elliot, *ibid.* This I have not yet seen, but shortly expect some specimens from Mr. Jerdon, who informs me that it is common at Nellore. It closely resembles the

last in all but colour, but has the crest-membranes still less developed. Colour dusky-brown, paler beneath. Inhabits Southern India.

Taphozous. Three new species of this genus have been described by me in *J. A. S.*, X, 971 *et. seq.*; and in XI, 784, I verified and gave a more detailed notice of the *T. longimanus*, Hardw., *Lin. Tr.* XIV, 525, and distinguished the species which I had previously referred with doubt to *T. longimanus*, by the appellation *T. Cantori*. This last mentioned Bat I have not again obtained in the neighbourhood of Calcutta, but have received a specimen from Mr. Jerdon, procured in the vicinity of Nellore (on the Coromandel coast), where it would appear to be not uncommon. This species is easily recognized by its flatly out-lying ears, recurved tail, little developed gular sac, and by the whiteness of the base of its fur, which shews conspicuously.

Another species from Southern India is my *T. brevicaudus*, which is at once distinguished from all the other known species by the shortness of its tail and interfemoral membrane. The specimen was from Travancore.

Since my description of *T. longimanus* was published, I have had several fresh specimens, and very recently obtained thirteen alive (of which two only were males) from the interval between a pillar and the wall against which it was placed. Five others escaped. These Bats clung with perfect facility to the smooth mahogany back of a cage into which they were put, hitching their claws in the minute pores of the wood, and creeping upon it in a manner that was surprising. The females were each about to give birth to a single offspring (early in August). Their size was remarkably uniform, both sexes measuring four inches and a quarter from snout to tail-tip, by sixteen and a quarter in alar expanse; the tail protruding half an inch: nostril not closed, but having a valvular kidney-shaped orifice, and tremulous, as observable in various other Bats, (for instance, the *Cynopterus marginatus*.) The variation in colour was not great, nor had it any relation to sex; but one or two were more hoary-tipped, imparting an ashy appearance, and one only was marked with yellowish or fulvescent.

I have also procured in this vicinity specimens of my *T. fulvidus*, and supply the following description of a recent male that was shot early one

morning, in bright day-light, creeping upon the stem of a palm. Length, to end of tail, four inches, the membrane extending three-quarters of an inch further ; tail seven-eighths of an inch, and (as usual) wholly retractile within the membrane ; alar expanse fifteen inches ; length of fore-arm two and three-eighths ; tarse an inch ; foot and claws half an inch. General colour slightly grizzled chesnut-brown, purer on head and neck, the abdominal region covered with shorter hair, weakly infuscated, and less tinged with chesnut ; axillary part of the membrane, from between the elbow to the flank inclusive, covered with longer and whitish hairs. Face, ears, and membrane, washed with dusky ; the portion of membrane between the hind-leg and proximate finger narrowly edged with whitish. One specimen purchased of a bazar shikarree is so much darker, that before I had obtained a good series of *T. longimanus* I had some doubt whether it ought not to be referred to that species ; and such an example may have been the original *longimanus* of Hardwicke, described as of a snuff-brown colour : but this name had better now remain as I have appropriated it. In general, the present species is of a tolerably bright chesnut hue. Like the preceding one (to which it is closely allied), the male has a very large throat-sac, the ears bend upwards, and the tail is straight and rigid, not recurved as in *T. Cantori*, and also as in the following species. The specimens which I formerly described had been long soaked in spirit, which seems to have discharged the colour from the face and membranes, and one of them which I have had taken out and stuffed, has the under-parts more uniformly coloured, the longer hair upon the membrane towards the axilla, and that of the abdomen, scarcely differing in hue from that of the breast ; whereas in the recently procured examples here described, the difference of colour in these parts is very conspicuous.

T. crassus, Nobis. This is a well marked species, having the recurved tail of *T. Cantori*, and ears bending upwards as in *longimanus* and *fulvidus*. It is particularly distinguished by its blackish colour, and the broad dull white margin of the membrane between the tibia and proximate finger, this margin increasing much in depth as it recedes from the finger-tip, and merging gradually into the black of the rest of the membrane, becoming at first mottled with the latter.

Length to end of tail four inches, the membrane reaching five-eighths of an inch beyond ; tail three-quarters of an inch, the terminal five-sixteenths protrusile and recurved : expanse fifteen inches and a half ; fore-arm two and five-eighths ; first phalanx of longest finger two and a half ; tibia an inch ; foot large, measuring with claws eleven-sixteenths of an inch : the sac little developed. Ears five-eighths of an inch apart at base anteriorly. Fur of the upper-parts black, or dark blackish-brown, a little hoary at the tips, and light brown at the extreme base ; under-parts inclining to ashy-black, and more grizzled ; membranes dusky, with the exception of the whitish margin described. On the particular specimen before me, are some pure white dashes on one side of the back, being traces of partial albinism. The nostrils appear to be quite closed by a valve, which would open at the will of the animal. Taken at Mirzapore, and presented to the Society by Major. R. Wroughton, to whom it is also indebted for examples of the *Rhinopoma*, and for numerous other interesting specimens.

T. pulcher, Elliot. A species from Southern India, recently discovered by Mr. Elliot, who informs me that it is "black-brown above with white pencillings, and pure white below." That naturalist will give a more detailed description of it in the Madras Journal.

Rhinopoma. From descriptions with which I have been favored, I had long felt satisfied that a Bat of this genus inhabited the renowned *taj* at Agra, where great numbers of them would seem to exist ; and there can be little doubt that the species is that marked *Rh. Hardwickii*, Gray, from India, in Mr. Waterhouse's catalogue of the stuffed specimens of Mammalia in the Zoological Society's Museum, and also that likewise referred to *Hardwickii* in Mr. Elliot's catalogue of the Mammalia of the Southern Mahratta country, as being found in old ruins to the eastward of that province. But a specimen in the Society's collection received from England, and said to be African, differs in no respect that I can perceive, and comparing both with the figure of *Rh. microphylla* in the national French work on Egypt, the only difference arises from what I presume is an inaccuracy in that figure ; viz. that the caudal vertebræ are not represented to be sufficiently elongated. Even on comparison of the skulls together, and with that figured by M. Geoffroy, I have been unable to detect any

diversity worthy of notice. The following description is drawn up from specimens received from Agra and Mirzapore. Entire length, (of a full grown male,) to end of the long slender tail, five inches and a half, the latter passing the membrane by two inches and a quarter; expanse twelve inches and a half: (length of a female five inches, by eleven inches in expanse:) fore-arm two inches and a quarter; longest finger two and three-quarters; tibia an inch and a quarter: foot with claws five-eighths of an inch; ears from base anteally seven-eighths of an inch, posteally half an inch, and width of the joined pair, from tip to tip, an inch and seven-sixteenths. Fur very fine and delicate, its general colour a soft dull brown, paler at base, where inclining towards albescent; the face, rump, and abdominal region naked, the skin of the rump corrugated, and together with the face and membranes dusky, having a tinge of plumbeous; the skin of the arms underneath, and of the belly and nates inferiorly, is transparent, the latter covering an enormous accumulation of fat, which above reaches over the loins and along the spine. Nostrils closed and valvular, forming obliquely transverse slits in the truncated muzzle: the claws conspicuously white.

Dysofes. I know of but one Indian species of this genus, which is the *Vespertilio plicatus* of Buchanan Hamilton, *Lin. Trans.* V, 261; the *Nyctinomus bengalensis* of M. Geoffroy; and I am inclined to regard the *D. murinus* of Hardwicke's published drawings as no other, indifferently represented. I was favored with a live specimen of this animal by Mr. Ridsdale, of Bishop's College Press, and lately obtained another which flew in at a window: Mr. Masters also has presented the Society with a stuffed one: all of these being much of a "snuff-brown" colour, the fur of the under-parts tipped paler: but there is an old specimen of what may perhaps be another species in the museum, the fur of which is remarkably close and velvety, and very dark fuliginous-brown above, with a shade of maronne, the under-parts similar but paler and somewhat reddish. So far as I can judge from the state of the specimen, it presents, however, no structural characters at variance with those of the other, that can warrant its being distinguished as a species; but I yet suspect that it

is a different species from the *plicatus*.* The affinity of this genus for *Taphozous* is very apparent in the living or recent specimens, the present group having even the same peculiar mode of folding the wings, which is not the case even with *Rhinopoma*, wherein there is merely a tendency or inclination to that particular mode of duplicature of the wings.

* It is probably the Malayan *D. tenuis*, v. *Nyctinomus tenuis*, Horsfield.

